

REMARKS

Claims 1, 16, 20, 30, 31, 40, 41, 50, 60, 61, 69, 77, 84, 88, 95, 107, 114, 117, and 119 have been amended. Claims 9, 70, 75, and 127 - 265 have been cancelled. Claims 266 - 364 have been added. Consequently, Claims 1 - 8, 10 - 69, 71 - 74, 76 - 126, and 266 - 364 are now pending.

The revisions to Claims 16, 30, 31, 40, 41, 50, 60, 69, 77, 95, 107, and 117 improve their form, clarify their scope, delete unnecessary language, and/or correct self-evident errors in grammar, typing, and punctuation. In particular, the term "getter region" in dependent Claims 30, 40, 60, 77, and 95 has been changed to "further getter region" to make it clear that the "getter region" introduced in Claims 30, 40, 60, 77, and 95 differs from the "getter region" introduced in their respective independent Claims 1, 31, 41, 61, and 84.

In Claim 31, the recitation "a primary electrically non-insulating layer" has been simplified to "an electrically non-insulating layer" since no other non-insulating layer is defined in Claim 31 or in any of its dependent claims. The recitation in Claim 31 that the getter region overlies the non-insulating layer above the light-blocking region has been changed to recite that the getter region overlies "at least part of" the non-insulating layer above "at least part of" the light-blocking region to make it clear that the non-insulating layer can extend laterally beyond the getter region and/or the light-blocking region.

Claim 41 has been clarified to expressly provide that the "composite opening" through the getter and support regions means (a) an opening through the getter region and (b) an opening through the support region. Unnecessary language has been deleted from Claims 20 and 50. Various grammatical, typing, and punctuation errors have been corrected in Claims 16, 30, 69, 88, 107, and 117.

The revisions to Claims 1, 61, 84, and 114 are discussed below.

Claims 69 and 107 have been objected to as having certain "informalities", essentially typing errors. The Examiner has indicated that "compromises" in Claim 69 presumably should be "comprises" and that "urther" in Claim 107 presumably should be "further". These typing errors have been corrected in Claims 69 and 107. The objection to Claims 69 and 107 as having the indicated "informalities" should now be withdrawn.

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Claims 1 - 30 and 41 - 126 have been rejected under 35 USC 102(b) as anticipated by Curtin et al. ("Curtin"), U.S. Patent 5,725,787. This rejection is respectfully traversed.

Curtin discloses a flat-panel CRT display in which spacer walls 308 extend between an electron-emitting device and a light-emitting device. The electron-emitting device consists of backplate 303 and overlying cathode structure 305 formed with electron-emissive elements 309, laterally separated emitter-electrode lines 310, laterally separated gate-electrode lines 311, and insulating layer 312. Electron-emissive elements 309 are allocated into an array of laterally separated electron-emissive regions situated over emitter-electrode lines 310. Each individual electron-emissive element 309 is situated largely in an opening (not shown) in insulating layer 312 and is exposed through a corresponding opening (likewise not shown) in one of gate-electrode lines 311 which extend perpendicular to emitter-electrode lines 310. Spacer walls 308 are situated on gate-electrode lines 311.

Curtin's light-emitting device consists of faceplate 302 and overlying anode structure 306 formed with laterally separated light-emissive phosphor stripes 313, laterally separated dark ridges 314, and light-reflective anode layer 315. Light-emissive stripes 313 and dark ridges 314 extend in the same direction and alternate with each other such that each stripe 313 is situated between a pair of ridges 314. Each light-emissive stripe 313 is also situated generally opposite a group of the electron-emissive regions formed with electron-emissive elements 309. Light-reflective layer 315 covers light-emissive stripes 313 and dark ridges 314. Spacer walls 308 contact light-reflective layer 315.

Importantly, dark ridges 314 form a "black matrix" that extends further away from faceplate 302 than do light-emissive stripes 313. Curtin reports that so raising the black matrix improves the display's image contrast.

At col. 6, Curtin specifies that metals such as nickel, chromium, niobium, gold, and nickel-iron alloys can be used to form dark ridges 314. Curtin also specifies that ridges 314 can additionally or alternatively be formed with electrical insulators, semiconductors, and materials such as silicon carbide. At the bottom of col. 6, Curtin specifies that light-reflective layer 315 consists of metal, preferably aluminum.

Fig. 5 of Curtin illustrates an embodiment of the light-emitting device in which each dark ridge 314 consists of a dark lower portion 314a and a light upper portion 314b. Curtin

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does not disclose the specific constituency of portions 314a and 314b. However, at col. 8, Curtin specifies that "portion 314b is formed with material that can be transparent".

Figs. 7A - 7J of Curtin illustrate a process for manufacturing an embodiment of the light-emitting device in which each dark ridge 314 consists of dark lower portion 314e and dark upper portion 314d. Lower ridge portions 314e are created from metal layer 325 which, as disclosed at col. 9, typically consists of black chromium or niobium. Hence, lower portions 314e typically consist of black chromium or niobium. Curtin later discloses in col. 9 that upper ridge portions 314d consist of dark or opaque metal, typically chrome or a nickel-iron alloy.

Independent Claim 1 has been amended to incorporate the further limitation of dependent Claim 9, now canceled, that the electrically non-insulating layer is "perforated", i.e., that openings extend through the non-insulating layer. In revising Claim 9, the adjective "primary" before "electrically non-insulating layer" has been deleted since, similar to Claim 31, no other electrically non-insulating layer is defined in Claim 1 or in any of its dependent claims. Accordingly, amended Claim 1 now recites:

1. A structure comprising:

a plate;

a light-blocking region overlying the plate and being generally non-transmissive of visible light, an opening extending largely through the light-blocking region above where the plate is generally transmissive of visible light;

a light-emissive region overlying the plate and situated at least partially in the opening in the light-blocking region;

a getter region overlying at least part of the light-blocking region and extending no more than partially laterally across the light-emissive region; and

a perforated electrically non-insulating layer overlying at least part of the getter region or/and at least part of the light-emissive region.

With respect to Claim 1, the Examiner alleges that "Figure 5 of Curtin shows a structure comprising a plate (302); a light-blocking region (314a) overlying the plate and being generally non-transmissive of visible light; an opening (not labeled) extending largely through the light-blocking region above where the plate is generally transmissive of visible light; a light-emissive region (313) overlying the plate and situated at least partially in the

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opening in the light-blocking region; a getter region (314b) overlying at least part of the light-blocking region and extending no more than partially laterally across the light-emissive region; and a primary electrically non-insulating layer (315) overlying at least part of the getter region or/and at least part of the light-emissive region". The Examiner thus appears to be analogizing the non-insulating layer of Claim 1 to light-reflective layer 315 of Curtin.

The Examiner later alleges with respect to Claim 9 that "Figure 5 of Curtin shows the non-insulating layer being perforated". However, Fig. 5 of Curtin does not disclose light-reflective layer 315 as being perforated. If the Examiner believes that the slanted shading utilized for layer 315 in Fig. 5 indicates perforation, this is incorrect. The slanted shading employed for layer 315 is conventional shading utilized to indicate that the shaded material is electrically conductive as is the case with layer 315.

Figs. 7I and 7J of Curtin likewise do not disclose light-reflective layer 315 as being perforated. Nowhere does Curtin disclose, or in any way suggest, that layer 315 is perforated. Curtin fails to meet the limitation of amended Claim 1 that the non-insulating layer be perforated. Consequently, Curtin does not anticipate Claim 1.

Nothing in Curtin would provide a person skilled in the art with any motivation or incentive for providing light-reflective layer 315 with perforations. Claim 1 is thus patentable over Curtin.

Claims 2 - 8 and 10 - 30 all depend (directly or indirectly) from Claim 1. Accordingly, dependent Claims 2 - 8 and 10 - 30 are patentable over Curtin for the same reasons as Claim 1.

Claim 14 recites that "the getter region comprises a titanium-zirconium alloy". Curtin does not disclose a titanium-zirconium alloy as a candidate for upper ridge portion 314b in Fig. 5. Nor does Curtin disclose that upper ridge portions 314d in Figs. 7G - 7J can contain a titanium-zirconium alloy. As a consequence, Claim 14 is separately allowable over Curtin.

Claim 17 recites that the structure includes "an additional region situated over at least part of the light-blocking region and under at least part of the non-insulating layer". With respect to Claim 17, the Examiner alleges that "Figure 6G of Curtin shows an additional region (323) situated over at least part of the light-blocking region and under at least part of the non-insulating layer".

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Fig. 6G of Curtin illustrates an intermediate stage in producing the light-emitting device of Fig. 6H according to the process of Figs. 6A - 6H. None of dark ridges 314 in Fig. 6G consists of two portions such as portions 314a and 314b in Fig. 5 of Curtin. Taking note of the fact that the Examiner has analogized upper ridge portion 314b in Fig. 5 to the getter region of Claim 1, Fig. 6G lacks an element analogous to the element that the Examiner has analogized to the recited getter region.

Perhaps the Examiner intended to cite Fig. 7I, rather than Fig. 6G, of Curtin in connection with Claim 17. Fig. 7I of Curtin illustrates an intermediate stage in producing the light-emitting device of Fig. 7J according to the process of Figs. 7A - 7J. Referring to Fig. 7G, each dark ridge 314 in Fig. 7I consists of dark lower portion 314e and dark upper portion 314d.

Region 323, which the Examiner has analogized to the additional region of Claim 17, appears in Fig. 7I of Curtin. As in Fig. 6G, region 323 in Fig. 7I is a lacquer layer. Curtin discloses at col. 9 that lacquer layer 323 is burned out, i.e., removed, to produce the final light-emitting device.

The elements recited in Claim 17 form a light-emitting device. The presence of lacquer layer 323 in the intermediate structure of Fig. 7I (or 6G) would prevent that structure from functioning suitably as a light-emitting device. That is, lacquer layer 323 needs to be removed in order to achieve suitable light-emitting operation. Since lacquer layer 323 is not present in the final light-emitting device of Fig. 7J (or 6H), the "additional region" recited in Claim 17 provides a separate basis for allowing Claim 17 over Curtin. The same applies to Claims 18 - 21 since they each depend from Claim 17.

Claim 22 recites that the structure includes "a protective layer situated over at least part of getter region and under the non-insulating layer, the protective layer lying between at least part of the getter region and at least part of the light-emissive region". With respect to Claim 22, the Examiner alleges that "Figure 6G of Curtin shows a protective layer (323) situated over at least part of the getter region and under the non-insulating layer, the protective layer lying between at least part of the getter region and at least part of the light-emissive region".

As with Claim 17, the elements recited in Claim 22 form a light-emitting device. The comments made about lacquer layer 323 in regard to Claim 17 carry over to Claim 22. The

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"protective layer" recited in Claim 22 thus provides a separate basis for allowing Claim 22 over Curtin. Due to its dependence from Claim 22, Claim 23 is also separately allowable over Curtin.

Claims 26 - 28 respectively recite that the getter region (a) "extends at least partway down into the opening in the light-blocking region", (b) "extends substantially all the way down into the opening in the light-blocking region", and (c) "extends into the opening in the light-blocking region and partially over the plate at the bottom of the opening in the light-blocking region". Although the Examiner alleges that Fig. 5 of Curtin discloses these three limitations, Curtin does not disclose the further limitation of any of Claims 26 - 28. Upper portion 314b of each dark ridge 314 in Fig. 5 lies fully on lower portion 314a and does not extend partway down or more into either adjacent opening that contains a light-emissive region 313. The same arises with (a) each upper ridge portion 314d in Figs. 7H - 7J, (b) each upper ridge portion 314g in Figs. 8H - 8J, and (c) each upper ridge portion 314i in Figs. 9I and 9J. Claims 26 - 28 are therefore separately allowable over Curtin.

Independent Claim 41, as amended to clarify its form and scope, recites:

41. A structure comprising:

a plate;

an electron-emissive element overlying the plate;

a support region overlying the plate; and

a getter region overlying at least part of the support region, a composite opening extending through the getter and support regions generally laterally where the electron-emissive element overlies the plate, the composite opening comprising (a) an opening through the getter region and (b) an opening through the support region.

As indicated above, Claim 41 has been revised to expressly state that the "composite opening" means (a) an opening through the getter region and (b) an opening through the support region.

With respect to Claim 41, the Examiner alleges that "Figure 2 of Curtin shows structure comprising a plate (303); an electron emissive element (309) overlying the plate; a support region (308) overlying the plate; a getter region (314b) overlying at least part of the support region; and a composite opening (not labeled) extending through the getter region

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and through the support region generally laterally where the electron-emissive element overlies the plate".

The elements recited in Claim 41 form an electron-emitting device. Backplate 303 and electron-emissive elements 309 in Curtin are part of the electron-emitting device in Curtin's flat-panel display. Spacer walls 308 extend between the electron-emitting and light-emitting devices in Curtin. Each dark ridge 314, which contains upper ridge portion 314b in the implementation of Fig. 5, is part of Curtin's light-emitting device. The Examiner is thus utilizing a set of analogies in which portions of Curtin's electron-emitting device are being combined with material outside Curtin's electron-emitting device in an attempt to reach the electron-emitting-device subject matter of Claim 41.

Regardless of the obtuse nature of the analogies presented by the Examiner in regard to Claim 41, spacer walls 308 analogized by the Examiner to the "support region" of Claim 41 are spaced apart from one another. No pair of walls 308 are connected together at opposite ends to form an annular structure through which an opening extends. Curtin fails to meet the limitation of Claim 41 that an opening extend through the support region. Consequently, Curtin does not anticipate Claim 41.

Nothing in Curtin would provide a person skilled in the art with any motivation or incentive for connecting any pair of spacer walls 308 together at opposite ends to form an annular structure through which an opening extends. No useful purpose would be served by making such a connection. In fact, making such a connection would increase the fabrication difficulty, fabrication cost, and display size without providing any benefit. Hence, Claim 41 is patentable over Curtin.

Claims 42 - 60 all depend (directly or indirectly) from Claim 41. As a result, dependent Claims 42 - 60 are patentable over Curtin for the same reasons as Claim 41.

Claim 46 recites that "the support region comprises a base focusing structure of an electron-focusing system for focusing electrons emitted by the electron-emissive element". With respect to Claim 46, the Examiner alleges that "Figure 2 of Curtin shows the support region comprising a base-focusing structure (305) of an electron-focusing system for focusing electrons emitted by the electron-emissive element." This is incorrect.

Firstly, the Examiner's analogies appear to be mixed up. In dealing with Claim 41 from which Claim 46 depends, the Examiner analogized spacer walls 308 to the recited

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"support region". The Examiner now cites item "305" as being a base focusing structure of the "support region". Item 305 is Curtin's cathode structure which includes backplate 303 and an electron-emissive element 309 that the Examiner previously respectively analogized to the plate and electron-emissive element of Claim 41. Hence, the Examiner's present analogy of cathode structure 305 to the base focusing structure of the recited support region appears inconsistent with the Examiner's previous analogy of spacer walls 308 to the recited support region.

Secondly, Curtin does not disclose any electron-focusing system. Electron-emissive elements 309 of cathode structure 305 in Curtin emit electrons. Light-reflective anode layer 315 attracts the emitted electrons toward light-emissive stripes 313. Spacer walls 308 prevent the external atmosphere from causing Curtin's display to collapse. In so doing, walls 308 also provide a fixed spacing between the electron-emitting and the light-emitting devices.

None of the components in Curtin's flat-panel CRT display provide electron focusing. Curtin thereby fails to meet the further limitation of Claim 46 that there be a base focusing structure of an electron-focusing system that focuses electrons emitted by the electron-emissive element. This further distinguishes Curtin from Claim 46 and provides a separate basis for allowing Claim 46 over Curtin. The same applies to Claims 47 - 50 since they all depend (directly or indirectly) from Claim 46.

Claim 52 requires that the getter region be "exposed through or/and situated in an opening" provided in a raised section which overlies the plate and extends over at least part of the control electrode. With respect to Claim 52, the Examiner alleges that "Figure 2 of Curtin shows a raised section overlying the plate and extending over at least part of the control electrode, the getter region being exposed through or/and situated in an opening in the raised section". The Examiner has not indicated what items in Curtin are believed to be analogous to the raised section and associated opening of Claim 52.

Applicants' Attorney is unable to find any Curtin items that are analogous to the raised section and associated opening of Claim 52. That is, nothing in Curtin appears to meet the requirement of Claim 52 that the getter region be "exposed through or/and situated in an opening" provided in the raised section. Claim 52 is therefore separately allowable over Curtin.

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Claim 53 recites that "the getter region focuses electrons emitted by the electron-emissive element". Citing col. 6, lines 1 - 3, the Examiner alleges with respect to Claim 53 that "Curtin discloses that the getter region focuses electrons emitted by the electron-emissive element (col. 6, ln. 1-3)". This is incorrect.

As mentioned above in connection with Claim 46, Curtin does not disclose an electron-focusing system. The Curtin material, i.e., lines 1 - 3 of col. 6, cited by the Examiner in regard to Claim 53, merely states that light-emissive regions 313 produce light when struck by electrons emitted by electron-emissive elements 309. Nothing in that material relates to electron focusing. Nor does Curtin elsewhere deal with electron focusing. Accordingly, Claim 53 is separately allowable over Curtin. The same applies to Claims 54 and 55 because they depend (directly or indirectly) from Claim 53.

Claim 61, as amended, recites:

61. A structure comprising:

a plate;

an electron-emissive element overlying the plate;

a control electrode for selectively extracting electrons from the electron-emissive element or for selectively passing electrons emitted by the electron-emissive element, the control electrode overlying the plate and having an opening through which the electron-emissive element is exposed; and

a getter region overlying at least part of the control electrode and contacting, or connected by directly underlying electrically insulating material to, the control electrode.

With respect to Claim 61, the Examiner alleges that "Figure 2 of Curtin shows structure comprising a plate (303); an electron emissive element (309) overlying the plate; a control electrode (310) for selectively extracting electrons from the electron-emissive element, the control electrode overlying the plate and having an opening (not labeled) through which the electron emissive element is exposed: and a getter region (314b) overlying at least part of the control electrode".

As a preliminary matter, the Examiner has cited Curtin item "310" as being a control electrode "for selectively extracting electrons from the electron-emissive element". Item 310 is an emitter-electrode line electrically coupled to a group of electron-emissive elements 309

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for providing a suitable voltage to those elements 309. Emitter-electrode lines 310 do not function to extract electrons from electron-emissive elements 309. Instead, the electron-extraction function is performed by gate-electrode lines 311. Accordingly, Applicants' Attorney assumes that the Examiner intended to cite item "311", i.e., a gate-electrode line, as being a control electrode "for selectively extracting electrons from the electron-emissive element".

The elements recited in Claim 61 form an electron-emitting device. Accordingly, the Examiner is again using analogies in which portions of Curtin's electron-emitting device are being combined with material outside the electron-emitting device in an attempt to reach an electron-emitting device claim. In fact, the Examiner later makes the same type of obtuse analogies in an effort to apply Curtin to the remaining higher-numbered original independent Claims 78, 84, 99, and 114 whose recited elements likewise each form an electron-emitting device.

In any case, Claim 61 has been amended to require that the getter region contact the control electrode or be connected by directly underlying electrically-insulating material to the control electrode. In Curtin, light-reflective metal layer 315 lies between each gate-electrode line 311 and dark ridges 314 including upper ridge portions 314b. (Light-reflective metal layer 315 also lies between each emitter-electrode line 310 and dark ridges 314 including upper ridge portions 314b.) Accordingly, no gate-electrode line 311 (or emitter-electrode line 310) contacts any dark ridge 314 or upper ridge portion 314b.

Light-reflective layer 315 consists of metal and is thus formed with electrically conductive material. As a result, no dark ridge 314 or upper ridge portion 314b is connected by directly underlying electrically insulating material to any of gate-electrode lines 311 (or to any of emitter-electrode lines 310). Curtin does not meet the limitation of Claim 61 that the getter region contact, or be connected by directly underlying electrically insulating material, to the control electrode. For this reason, Curtin fails to anticipate Claim 61.

Nothing in Curtin would provide a person skilled in the art with any suggestion or motivation for deleting light-reflective layer 315 from Curtin's display. In fact, removing layer 315 would cause Curtin's display to become inoperative because its anode would be missing. Hence, Claim 61 is patentable over Curtin.

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Claims 62 - 77 all depend (directly or indirectly) from Claim 61. The same applies to new Claim 267. Consequently, dependent Claims 62 - 77 and 267 are patentable over Curtin for the same reasons as Claim 61.

Claim 65 recites that "the getter region is exposed through or/and situated in the primary opening in the raised section" where the raised section is recited in Claim 64 as "extending over at least part of the control electrode". Claim 68 similarly recites that "the getter region is exposed through or/and situated in a further opening in the raised section" subject to the additional limitation that "no operable electron-emissive element" be "exposed through the further opening in the raised section". Claims 65 and 68 each thus require that the getter region be "exposed through or/and situated in" an opening in the raised section.

With respect to Claim 65, the Examiner alleges that "Figure 2 of Curtin shows the getter region being exposed through or/and situated in the primary opening in the raised section". The Examiner similarly alleges with respect to Claim 68 that "Figure 2 of Curtin shows the getter region being exposed through or/and situated in a further opening in the raised section, no operable electron-emissive element being exposed through the further opening". The Examiner has not indicated what items in Curtin are believed to be analogous to the raised section and associated opening in Claim 65 or 68.

Analogous to what Applicants' Attorney said above about Claim 52, nothing in Curtin appears to meet the requirement of Claim 65 or 68 that the getter region be exposed through, or/and situated in, an opening in the raised section. Claims 65 and 68 are therefore separately allowable over Curtin. The same applies to Claims 66 and 67 since they depend (directly or indirectly) from Claim 65, and to Claims 69 and 71 since they similarly depend (directly or indirectly) from Claim 68.

Claim 72 recites that "the raised section comprises an electron-focusing system for focusing electrons emitted by the electron-emissive element". Claim 73 recites that "the getter region focuses electrons emitted by the electron-emissive element".

The Examiner alleges with respect to Claim 72 that "Figure 2 of Curtin shows the raised section comprising an electron-focusing system for focusing electrons emitted by the electron-emissive element". Again citing col. 6, lines 1 - 3, the Examiner alleges with respect to Claim 73 that "Curtin discloses that the getter region focuses electrons emitted by the electron-emissive element".

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As pointed out above, Curtin does not disclose any electron-focusing system. Curtin thus fails to meet the electron-focusing structural limitations of Claims 72 and 73. For this reason, Claims 72 and 73 are separately allowable over Curtin. The same applies to Claim 74 since it depends from Claim 73.

Independent Claim 78 recites:

78. A structure comprising:

a plate;

an electron-emissive element overlying the plate; and

a getter region overlying the plate, the getter region being shaped, positioned, and controlled to focus electrons emitted by the electron-emissive element.

With respect to Claim 78, the Examiner alleges that "Figure 2 of Curtin shows a structure comprising a plate (303); an electron-emissive element (309) overlying the plate; and a getter region (314) overlying the plate".

Claim 78 requires that the getter region be "shaped, positioned, and controlled to focus electrons emitted by the electron-emissive element". As mentioned above, Curtin does not disclose any electron-focusing system. Accordingly, Curtin fails to meet the requirement of Claim 78 that the getter region be "shaped, positioned, and controlled to focus electrons emitted by the electron-emissive element". Curtin thus does not anticipate Claim 78.

Nothing in Curtin would provide a person skilled in the art with any incentive or suggestion for modifying Curtin's flat-panel display to include a getter region that also functions as an electron-focusing system. Hence, Claim 78 is patentable over Curtin.

Claims 79 - 83 all depend (directly or indirectly) from Claim 78. The same applies to new Claims 268 - 270. Consequently, dependent Claims 79 - 83 and 268 - 270 are patentable over Curtin for the same reasons as Claim 78.

Claim 79 recites that "the getter region receives a focus potential". Claim 82 recites that the structure further includes "an electrically insulating layer overlying at least part of the control electrode" and that the getter region overlies "at least part of the insulating layer and" is "of greater average thickness than the insulating layer". Despite the Examiner's

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allegations to the contrary, Curtin does not disclose the further limitation of Claim 79 or 82. For this reason, Claims 79 and 82 are separately allowable over Curtin.

Independent Claim 84, as amended, recites:

84. A structure comprising:

a plate;

a group of electron-emissive elements overlying the plate;

a group of laterally separated control electrodes for selectively extracting electrons from the electron-emissive elements or for selectively passing electrons emitted by the electron-emissive elements, the control electrodes overlying the plate, the electron-emissive elements being exposed through respective openings in the control electrodes; and

a getter region overlying the plate at least partially between a consecutive pair of the control electrodes.

With respect to Claim 84, the Examiner alleges that "Figure 2 of Curtin shows a structure comprising a plate (303); a group of electron-emissive elements (309) overlying the plate; a group of laterally separated control electrodes (310), the control electrodes overlying the plate, the electron-emissive elements being exposed through openings in the control electrodes; and a getter region (314) overlying the plate at a location between where a consecutive pair of the control electrodes overlie the plate". For the reasons presented above in connection with the analogies that the Examiner made between the elements of Curtin's display and the elements of Claim 61, Applicants' Attorney assumes that the Examiner intended to analogize the control electrodes of Claim 84 to gate-electrode lines "311" in Curtin rather than to Curtin's emitter-electrode lines "310".

Claim 84 has been amended to require that the getter region be located "at least partially between a consecutive pair of the control electrodes". Subject to the assumption that gate-electrode lines 311 of Curtin are intended to be analogized to the control electrodes of Claim 84, no part of any dark ridge 314 lies between any consecutive pair of gate-electrode lines 311. (Nor does part of any dark ridge 314 lie between any consecutive pair of emitter-electrode lines 310.) Curtin does not meet the requirement of Claim 84 that the getter region be located "at least partially between a consecutive pair of the control electrodes". Accordingly, Curtin does not anticipate Claim 84.

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Dark ridges 84 are located in Curtin's light-emitting device rather than in the electron-emitting device. Nothing in Curtin would provide a person skilled in the art with any suggestion or incentive to move one or more of dark ridges 314 from Curtin's light-emitting device to the electron-emitting device and then place at least part of one so-moved ridge 314 between a pair of gate-electrode lines 311 (or between a pair of emitter-electrode lines 310). Hence, Claim 84 is patentable over Curtin.

Claims 85 - 98 all depend (directly or indirectly) from Claim 84. New Claims 271 - 273 likewise all depend (directly or indirectly) from Claim 84. Consequently, dependent Claims 85 - 98 and 271 - 273 are patentable over Curtin for the same reasons as Claim 84.

Claim 88 recites that the structure includes "a raised section overlying the plate and extending over at least part of each control electrode", that the electron-emissive elements are "exposed through respective openings in the raised section" and that the getter region is "exposed through or/and situated in an opening in the raised section". Claim 93 repeats the further limitation of Claim 88 except that the opening which exposes or/and contains the getter region is recited in Claim 93 as an "additional" opening.

With respect to Claim 88, the Examiner alleges that "Figure 2 of Curtin shows a raised section overlying the plate and extending over at least part of the control electrode, the electron-emissive element also being exposed through respective openings in the raised section, the getter region being exposed through or/and situated in an opening in the raised section". The Examiner alleges with respect to Claim 93 that "Figure 2 of Curtin shows a raised section extending over at least part of each control electrode, the electron-emissive element also being exposed through respective openings in the raised section, the getter region being exposed through or/and situated in an opening in the raised section". As is the situation with each of Claims 52, 65, and 68 which likewise require that the getter region be exposed through or/and situated in an opening in the raised section, the Examiner has again failed to identify what items in Curtin are believed to be analogous to the raised section and associated opening in each of Claims 88 and 93.

Nothing in Curtin appears to meet the requirement of Claims 88 and 93 that the getter region be "exposed through or/and situated in" an opening in the raised section.

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Consequently, Claims 88 and 93 are separately allowable over Curtin. The same applies to Claims 89 and 90 because they depend (directly or indirectly) from Claim 88.

Additionally, Claim 89 recites that "the raised section comprises an electron-focusing system for focusing electrons emitted by the electron-emissive elements". Claim 90 recites that "the raised section further includes an additional getter region situated over at least part of an electrically non-insulating base focusing structure of the electron-focusing system".

Despite the Examiner's allegations to the contrary, Curtin does not disclose the electron-focusing structural limitations of Claim 89 or 90. Once again, Curtin lacks an electron-focusing system. Additional separate bases are thereby provided for allowing Claims 89 and 90 over Curtin.

Independent Claim 99 recites:

99. A structure comprising:

a plate;

a group of electron-emissive elements overlying the plate;

a group of laterally separated control electrodes for selectively extracting electrons from the electron-emissive elements or for selectively passing electrons emitted by the electron-emissive elements, the control electrodes overlying the plate;

a raised section overlying the plate and extending over at least part of each control electrode; and

a getter region overlying the plate and exposed through or/and situated in a primary opening in the raised section.

With respect to Claim 99, the Examiner alleges that "Figure 2 of Curtin shows a structure comprising a plate (303); a group of electron-emissive elements (309) overlying the plate; a group of laterally separated control electrodes (310), the control electrodes overlying the plate; a raised section overlying the plate and extending over at least part of each control electrode; and a getter region (314) overlying the plate and exposed through of/and [sic, or/and] situated in a primary opening in the raised section". Once again for the reasons presented above in connection with the analogies that the Examiner made between the elements of Curtin's display and the elements of Claim 61, Applicants' Attorney assumes that the Examiner intended to analogize the control electrodes of Claim 99 to gate-electrode lines "311" in Curtin rather than to Curtin's emitter-electrode lines "310".

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The Examiner has not indicated what element in Curtin is being analogized to the raised section of Claim 99. For purposes of responding to the Examiner's comments about Claim 99, Applicants' Attorney assumes that the Examiner intended to analogize spacer walls 308 to the raised section of Claim 99. If this is incorrect, it would be appreciated if the Examiner would clarify the matter.

Claim 99 requires that the getter region be "exposed through or/and situated in an opening in a raised section". As far as Applicants' Attorney can determine, Curtin does not disclose this requirement regardless of whether the raised section of Claim 99 is analogized to spacer walls 308 or to some other item(s) in Curtin's display. No pair of spacer walls 308 is connected together at opposite ends to form an annular structure through which an opening extends as is required for the raised structure of Claim 99. Curtin's display does not appear to have any other structure which meets the positioning and structure-opening limitations of the raised structure of Claim 99. Hence, Curtin does not anticipate Claim 99.

As indicated above in connection with Claim 41, nothing in Curtin would motivate a person skilled in the art to connect any pair of spacer walls 308 together at opposite ends to form an annular structure through which an opening extends. Again, no useful purpose would be achieved by so connecting a pair of spacer walls 308. There would be no reason for modifying walls 308 so that any dark ridge 314 is exposed through or/and situated in the opening in the so-modified version of walls 308. Nor would anything else in Curtin provide a person skilled in the art with any incentive for modifying Curtin's display so that it has some other structure having an opening that exposes or/and contains any dark ridge 314. Consequently, Claim 99 is patentable over Curtin.

Claims 100 - 113 all depend (directly or indirectly) from Claim 99. The same applies to new Claims 274 - 280. Hence, dependent Claims 100 - 113 and 274 - 280 are patentable over Curtin for the same reasons as Claim 99.

Claim 100 provides that the electron-emissive elements are exposed through "respective further openings in the raised section" and that "one of the further openings in the raised section" can be "the primary opening in the raised section". Claim 102 recites that "one of the electron-emissive elements is exposed through the primary opening in the raised section". Claim 105 recites that "no operable electron-emissive element is exposed through

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the opening in the raised section". Claim 112 specifies that the electron-emissive elements are "exposed through respective openings in the raised section".

Lacking the raised section of Claim 99, Curtin does not meet the further limitation of any of Claims 100, 102, 105, and 112 despite the Examiner's allegations to the contrary. Separate bases are thereby provided for allowing Claims 100, 102, 105, and 112 over Curtin. The same applies to Claims 100, 103, 104, and 106 - 108 because they variously depend (directly or indirectly) from Claims 100, 102, and 105.

Claim 113 recites that "the raised section comprises an electron-focusing system for focusing electrons emitted by the electron-emissive elements". While the Examiner alleges that "Figure 2 of Curtin shows the raised section" as "comprising an electron-focusing system for focusing electrons emitted by the electron-emissive elements", Curtin does not actually disclose an electron-focusing system. For this reason, Claim 113 is separately allowable over Curtin.

Claim 114, as amended, recites:

114. A structure comprising:

a plate;

a dielectric layer overlying the plate;

a group of electron-emissive elements overlying the plate and situated mostly in respective laterally separated openings in the dielectric layer; and

a getter region overlying at least part of the dielectric layer and contacting, or connected by directly underlying electrically non-insulating material to, the dielectric layer, at least part of the getter region situated above a location between a pair of the openings in the dielectric layer.

With respect to Claim 114, the Examiner alleges that "Figure 2 of Curtin shows a structure comprising a plate (303); a dielectric material is placed between the plates for stability (col. 1, ln. 59-62); and a getter region (314)".

Claim 114 has been amended to require that the getter region contact the dielectric layer or be connected by directly underlying electrically non-insulating material to the dielectric layer.

Spacer walls 308 are situated between (a) insulating layer 312 in Curtin's electron-emitting device and (b) light-reflective layer 315 that overlies dark ridges 314 and electron-

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emissive regions 313 in Curtin's light-emitting device. Accordingly, none of dark ridges 314 contacts insulating layer 312. At col. 4, Curtin provides that spacer walls 308 are electrically insulating. Hence, none of ridges 314 is connected by directly underlying electrically non-insulating material to insulating layer 312. Curtin fails to meet the limitation of Claim 114 that the getter region contact, or be connected by directly underlying electrically non-insulating material, to the dielectric layer. Accordingly, Curtin does not anticipate Claim 114.

Nothing in Curtin would provide a person skilled in the art with any motivation or suggestion for modifying Curtin's display so that any of dark ridges 314 contacts insulating layer 312 or is connected by directly underlying electrically non-insulating material to insulating layer 312. Hence, Claim 114 is patentable over Curtin.

Claims 115 - 126 all depend (directly or indirectly) from Claim 114. New Claims 281 - 288 likewise depend (directly or indirectly) from Claim 114. As a consequence, dependent Claims 115 - 126 and 281 - 288 are patentable over Curtin for the same reasons as Claim 114.

Claims 115 and 125 each recite that "the getter region focuses electrons emitted by the electron-emissive elements". With reference to Claims 117 and 118 which provide that the structure includes a raised section having a support region, Claim 119 recites that "the support region comprises a base focusing structure of an electron-focusing system for focusing electrons emitted by the electron-emissive elements". As mentioned above, Curtin does not disclose a capability for focusing electrons. Despite the Examiner's allegations to the contrary, Curtin fails to disclose the electron-focusing structural limitations of Claims 115, 119, and 125. This provides separate bases for allowing Claims 115, 119, and 125 over Curtin.

Claims 121 and 124 each recite the raised section overlies at least part of the dielectric layer and that the getter region is "exposed through or/and situated in a further opening in the raised section". Although the Examiner alleges that Curtin discloses the further limitations of Claims 121 and 124, this is incorrect for the reasons presented above in connection with Claims 52, 65, 68, 88, 93, 99, 100, 102, 105, and 112. Claims 121 and 124 are separately allowable over Curtin. The same applies to Claim 122 since it depends from Claim 121.

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Claims 31 - 40 have been rejected under 35 USC 103(a) as obvious based on Curtin. This rejection is respectfully traversed.

Independent Claim 31, as amended to clarify its form and scope, recites:

31. A structure comprising:

a plate;

a light-blocking region overlying the plate and being generally non-transmissive of visible light, an opening extending largely through the light-blocking region above where the plate is generally transmissive of visible light;

a light-emissive region overlying the plate and situated at least partially in the opening in the light-blocking region;

an electrically non-insulating layer overlying at least part of the light-blocking region; and

a getter region overlying at least part of the non-insulating layer above at least part of the light-blocking region, an opening extending largely through the getter region generally laterally where the light-emissive region overlies the plate.

In contrast to independent Claim 1 which requires that the non-insulating layer overlie at least part of the getter region or/and at least part of the light-emissive element, Claim 31 requires that the getter region overlie at least part of the non-insulating layer above at least part of the light-blocking region.

With respect to Claim 31, the Examiner alleges that "Figure 5 of Curtin shows a structure comprising a plate (302); a light-blocking region (314a) overlying the plate and being generally non-transmissive of visible light; an opening (not labeled) extending largely through the light-blocking region above where the plate is generally transmissive of visible light; a light-emissive region (313) overlying the plate and situated at least partially in the opening in the light-blocking region; and a primary electrically non-insulating layer (315) overlying at least part of the light-blocking region".

After stating that Curtin "fails to exemplify a getter region overlying the non-insulating layer above the light-blocking region", the Examiner alleges with reference to col. 11, lines 30 - 49, that "Curtin discloses that the getter layer could be rearranged to other locations without departing from the spirit of the invention" and that it therefore "would have been obvious to one having ordinary skill in the art at the time the invention was made to

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provide the getter layer of Curtin overlying the non-insulating layer, since rearranging parts of an invention involves only routine skill in the art".

The Examiner has not indicated what element is considered to be Curtin's "getter layer". Nonetheless, based on the Examiner's comments presented above in connection with Claim 1, Applicants' Attorney assumes that the "getter layer" here means upper ridge portion 314b in Fig. 5 of Curtin.

The Examiner's statement that "rearranging parts of an invention involves only routine skill in the art" is, as far as Applicants' Attorney is aware, an incorrect statement of patent law. Although there are some situations in which rearranging parts of a known device or method may only require routine skill in the art and thus not result in the so-modified device or method being patentable, there are many situations in which rearranging parts of a known device or method requires skill well beyond that of the ordinary skilled artisan and leads to a modified, patentable device or method.

A principal feature of Curtin's invention is that the black matrix formed with the dark ridges, e.g., dark ridges 314, extends further away from the plate, e.g., faceplate 302, than do the light-emissive regions, e.g., light-emissive regions 313. See the first three paragraphs of the Summary-of-the-Invention section in col. 2 of Curtin. Such a black matrix is referred to in Curtin as a "raised" black matrix because it is raised relative to the light-emissive regions.

Forming each dark ridge 314 in two parts, e.g., (a) portions 314a and 314b in Fig. 5, (b) portions 314e and 314d in the process of Figs. 7A - 7J, (c) portions 314f and 314g in the process of Figs. 8A - 8J, or (d) portions 314h and 314i in the process of Figs. 9A - 9J, enables Curtin to reach the desired height for ridges 314 in an efficient manner. In all of these examples, light-reflective layer 315 is situated on top of ridges 314.

Some of the materials recited as candidates for dark ridges 314 can serve as getters. However, Curtin nowhere indicates or in any way suggests that any of the materials suitable for use in ridges 314 is to perform a gettering function. Instead, Curtin's purpose in forming each ridge 314 as two portions is clearly to achieve the desired height for the raised black matrix in a manner that is efficient and substantially enhances the display's contrast.

Attempting to transfer the upper ridge portion of any two-portion dark ridge 314 to a location above light-reflective layer 315 would make Curtin's manufacturing process considerably more complex and expensive. Nothing in Curtin suggests that transferring the

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upper ridge portion of a two-portion ridge 314 to a location above layer 315 would further any of Curtin's objectives in regard to achieving a raised black matrix. In the absence of the teachings of the present invention, a person skilled in the art would have no incentive or motivation for transferring an upper ridge portion, such as portion 314b, 314d, 314g, or 314i, formed with getter material to the top of layer 315. Accordingly, Curtin does not make Claim 31 obvious.

Claims 32 - 40 all depend (directly or indirectly) from Claim 31. The same applies to new Claim 266. Consequently, dependent Claims 32 - 40 and 266 are patentable over Curtin for the same reasons as Claim 31.

New independent Claims 289, 310, 319, 337, and 355 are essentially respective distributed-getter extensions of independent Claims 1, 31, 43, 61, and 78. Hence, Claims 289, 310, 319, 337, and 355 are variously patentable over Curtin for the same respective reasons as Claims 1, 31, 41, 61, and 78.

Claims 290 - 309 all depend (directly or indirectly) from Claim 289. Claims 311 - 318 all depend (directly or indirectly) from Claim 310. Claims 320 - 336 all depend (directly or indirectly) from Claim 319. Claims 338 - 354 all depend (directly or indirectly) from Claim 337. Claims 356 - 364 all depend (directly or indirectly) from Claim 355. As a result, dependent Claims 290 - 309, 311 - 318, 320 - 336, 338 - 354, and 356 - 364 are variously patentable over Curtin for the same respective reasons as Claims 289, 310, 319, 337, and 355 and thus for the same respective reasons as Claims 1, 31, 41, 61, and 78.

In addition, certain of dependent Claims 290 - 309, 311 - 318, 320 - 336, 338 - 354, and 356 - 364 repeat, or largely repeat, further limitations of earlier dependent claims that are separately allowable over Curtin. Consequently, those particular claims variously depending from Claims 289, 310, 319, 337, and 355 are separately allowable over Curtin for the respective reasons given above for the respectively corresponding earlier claims.

In short, all of pending Claims 1 - 8, 10 - 69, 71 - 74, 76 - 126, and 266 - 364 have been shown to be patentable over Curtin. Claims 1 - 8, 10 - 69, 71 - 74, 76 - 126, and 266 - 364 should therefore be allowed so that the application may proceed to issue.

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